

REMARKS

In response to the Official Action mailed March 28, 2003, Applicants request reconsideration in view of the following remarks. No claims are added, cancelled, or amended. The claims appear in the Appendix for the convenience of the Examiner.

The invention concerns a wire electrode for electrical discharge machining. In particular, the wire electrode has a three-layer structure in the form of a wire. That wire includes an electrically conductive core. The core is covered by a first coating of a copper-zinc intermetallic compound that has a phase not including, i.e., different from or "other than", the α phase of the intermetallic compound. (The patent application mentions β and γ phases as other phases.) The wire also includes a second coating of a copper-zinc alloy in the α phase on the first coating. Claim 1, the only independent claim, also specifies that this second coating, the third layer of the three-layer structure, has a thickness from 5 to 15 microns.

The Examiner objected to Figure 1 of the patent application as lacking proper cross-hatching. Applicants agree that no cross-hatching appears in that figure but the nature of the disclosure is such that the cross-hatching seems unnecessary. Each of the three layers is clearly electrically conducting. Nevertheless, a substitute drawing sheet is included in this Amendment, in keeping with current practice, rather than relying upon the outdated drawing paragraphs included in the Official Action.

All of the examined claims, claims 1-6, were rejected as unpatentable over Shimojima et al. (U.S. Patent 6,362,447, hereinafter Shimojima) in view of Kuroda (JP 2000-246546). This rejection is respectfully traversed.

In relying upon Shimojima, the Official Action cited column 2, lines 43-46 of Shimojima three times. This passage is relied upon as disclosing "a first coating of Cu-Zn intermetallic compound in other than an alpha phase surrounding the core." The cited four lines of Shimojima are reproduced below.

a core metallic wire formed of Cu-0.02 to 0.2Zr alloy
or Cu-0.15 to 0.25Sn-0.15 to 0.25 In alloy, and
a Cu-Zn alloy covering layer formed of a mixing
composition of $\alpha 0$ and β phases.

The only interpretation that can be given to this passage that is consistent with the rejection is that the Examiner interpreted $\alpha 0$ as meaning the absence of any α phase Cu-Zn alloy covering the recited core. While the Examiner's interpretation is understood, it is incorrect. The 0 is a typographical error and there is no disclosure in the Shimojima patent that there is ever a first layer covering a core layer that is a copper-zinc alloy free of the α phase. The existence of the typographical error can be demonstrated in two distinct ways.

First, the entire disclosure of Shimojima is completely contrary to the concept that the layer covering the core is free of the α phase of the alloy. See the paragraph in column 4, lines 35-48. Applicants particularly direct the Examiner's attention to the final sentence of that paragraph.

"Since it is extremely difficult to process a Cu-Zn alloy covering layer formed of a single phase composition of only β phase by cold working, this alloy layer is in the outside of the scope in the invention."

In spite of the poor quality of the translation, this passage makes clear that Shimojima excludes from consideration a covering layer of only the β phase within the scope of his invention. Thus, the interpretation of column 2, line 46 is based upon a typographical error. When the error is corrected, it is apparent that Shimojima cannot stand for the proposition for which it was cited.

There is a second, even more convincing, basis for proving that the rejection is not based upon disclosure of Shimojima, but an interpretation of Shimojima based upon a typographical error made by the U.S. Patent and Trademark Office in printing Shimojima. The Shimojima patent application was filed recently enough to have been published as U.S. patent application publication 2001/0050269, a copy of which is attached. The Examiner's attention is directed to paragraph [0019], which clearly shows the absence of the 0 that improvidently appears in the issued patent.

Likewise, a corresponding patent application was filed in Germany, which was published as DE 199 11 095, a copy of which is also attached. The line in that German language publication corresponding to column 2, line 46 of Shimojima appears as line 1 on page 3. It is readily apparent that that line describes a mixture of α and β phases. Even without an understanding of the German language, it is apparent that there is no 0 preceding the α .

While the basic patent application underlying Shimojima was published as JP 11-320269, because of the rearrangement of the Japanese patent application in its preparation for filing in the United States and Germany, there is no specific line that directly corresponds to column 2, line 46 of the U.S. patent. However, a computer translation of that Japanese publication, which is attached, demonstrates that there is no disclosure of a jacket of an intermetallic compound of copper and zinc that is free of the α phase.

Because of the unfortunate typographical error in Shimojima, the Examiner has been misled as to what is disclosed in that patent. The patent must be interpreted as it would be by one of skill in the art and as disclosed by Mr. Shimojima and his colleagues, not based upon a typographical error that is not the intended or even the patentees' disclosure. When the correct interpretation is made, then it is apparent that the basis for the rejection disappears unless the

secondary reference, Kuroda, discloses a electrical discharge wire having a coating on a core meeting the requirements of claim 1.

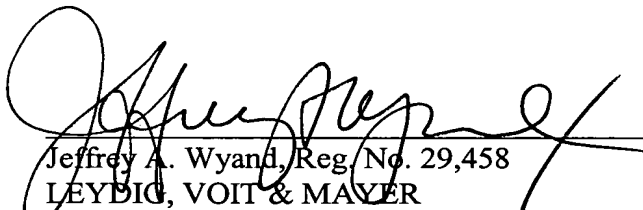
Kuroda was fundamentally relied upon as showing a three layer structure, not as supplying a first coating of a Cu-Zn in a metallic compound, not in the α phase, surrounding the core. Kuroda was supplied both in the Information Disclosure Statement filed with the patent application and with the Official Action. It describes, according to the English language abstract, a wire having a core of copper-tin-indium alloy with a coating including two layers, an inner layer 3 directly on the core and being an α phase of a copper-zinc alloy, and an outer layer 4 with a higher zinc content and in the β phase. In other words, like Shimojima, Kuroda does not describe a core with a first coating of a copper-zinc intermetallic compound not in the α phase. Moreover, Kuroda does not even describe a second coating on the first coating in the α phase. Rather, the second coating in Kuroda is in the β phase.

As explained in the patent application, by employing an outermost coating of Cu-Zn in the α -phase, the claimed wire is easily manufactured due to the workability of that phase. The Kuroda wire has an outer coating of Cu-Zn in the β phase and, thus, does not disclose or suggest this feature of the invention.

While not essential to demonstrating the error in the rejection, it is noted that Shimojima directly teaches against and excludes including an outer coating of a β phase of the copper-zinc alloy. By contrast, Kuroda describes an outer coating of the β phase of the alloy. Thus, Shimojima could not be modified by Kuroda because the two publications teach in opposite directions.

Reconsideration and withdrawal of the rejection as well as allowance of all of claims 1-6 are appropriate and earnestly solicited.

Respectfully submitted,


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Request Reconsider (Rev. 10/4/2002)

APPENDIX

PENDING CLAIMS

1. (Previously Amended) A wire electrode for wire electrical discharge machining including a three-layer structure comprising an electrically conductive core, a first coating of Cu-Zn intermetallic compound in other than an α phase surrounding the core, and a second coating of Cu-Zn alloy in the α phase on the first coating, wherein the second coating has a thickness in a range from 5 to 15 μm .
2. (Previously Amended) The wire electrode for wire electrical discharge machining according to Claim 1, wherein the first coating comprises Cu-Zn alloy in a β phase.
3. (Previously Amended) The wire electrode for wire electrical discharge machining according to Claim 1, wherein the core comprises Cu-Zr alloy.
4. (Previously Amended) The wire electrode for wire electrical discharge machining according to Claim 2, wherein the core comprises Cu-Zr alloy.
5. (Previously Amended) The wire electrode for wire electrical discharge machining according to Claim 1, wherein the core comprises Cu-Zn alloy.
6. (Previously Amended) The wire electrode for wire electrical discharge machining according to Claim 2, wherein the core comprises Cu-Zn alloy.